

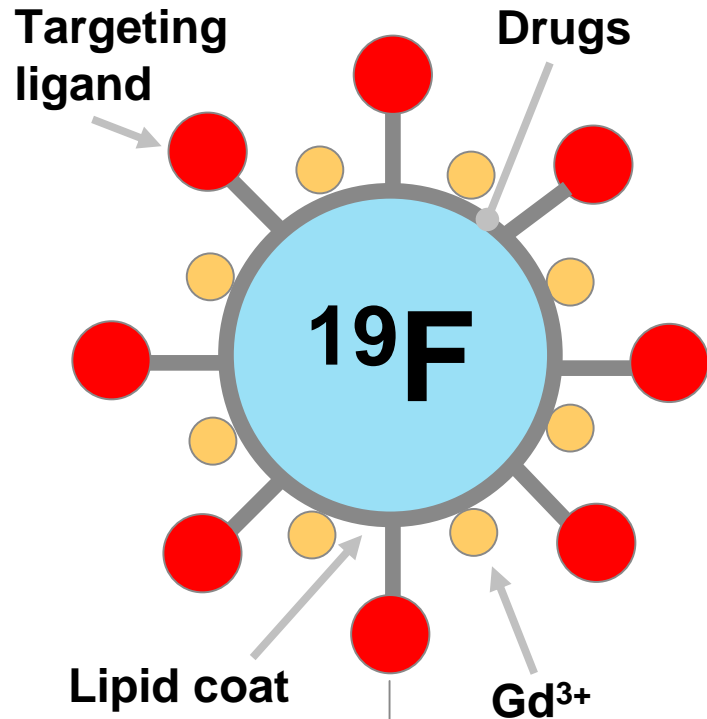
The Intersection of Nanotechnology and Cancer Research: The Clinical Perspective

Science Writers and Media Briefing | September 13, 2004

Samuel Wickline, M.D.

**Professor of Medicine, Physics and Biomedical
Engineering, Washington University**

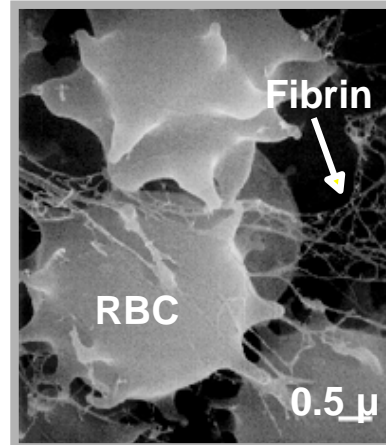
Nanoscale Targeting Agents: *Liquid Perfluorocarbon Nanoparticle Emulsion*



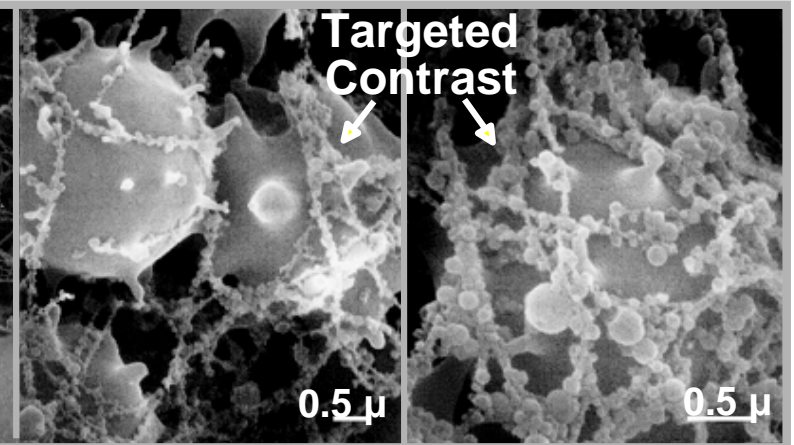
Microemulsification under
10-20,000 lbs/in²



Before



After

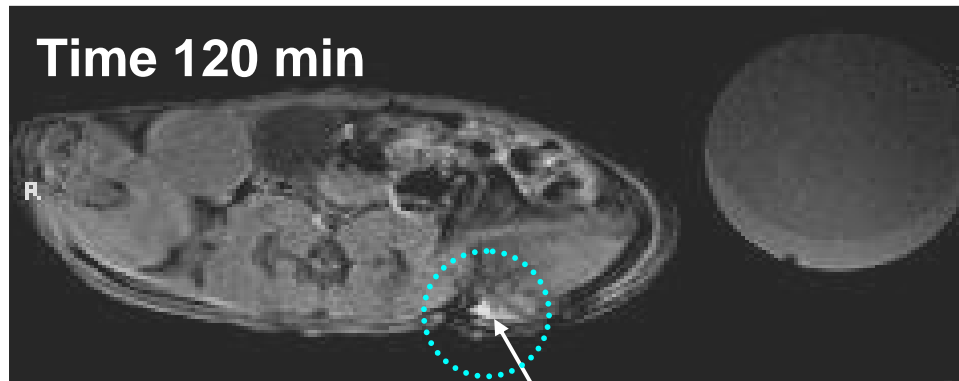
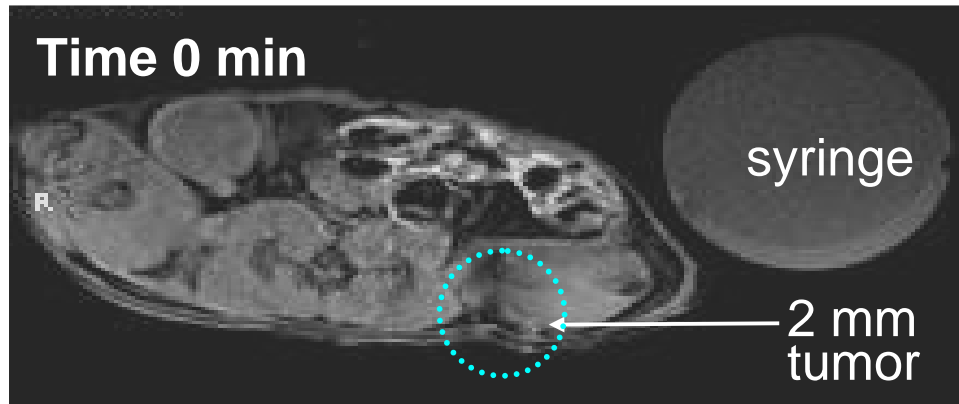


Fibrin-targeted particles binding to
clot *in vitro* (SEM)

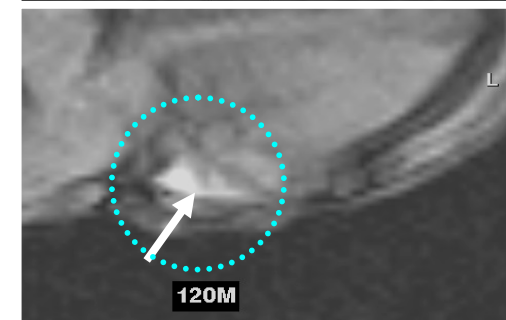
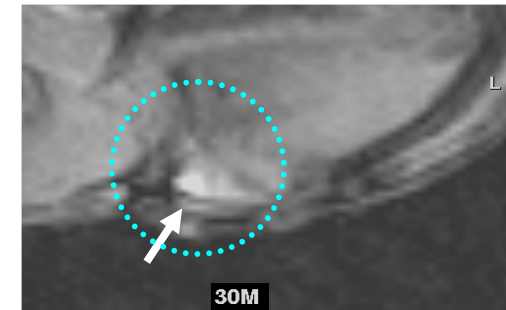
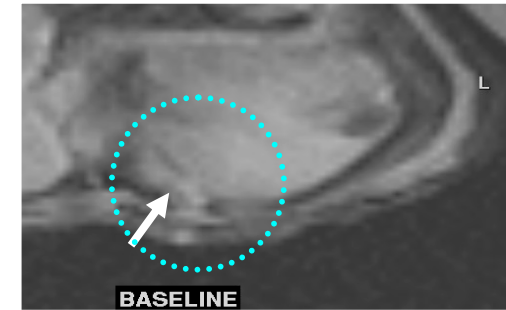
Stable for > 1 year

Imaging Tumor Angiogenesis with MRI

$\alpha_v\beta_3$ Integrin-Targeted Paramagnetic Nanoparticles (Mouse Imaged @ 1.5T)

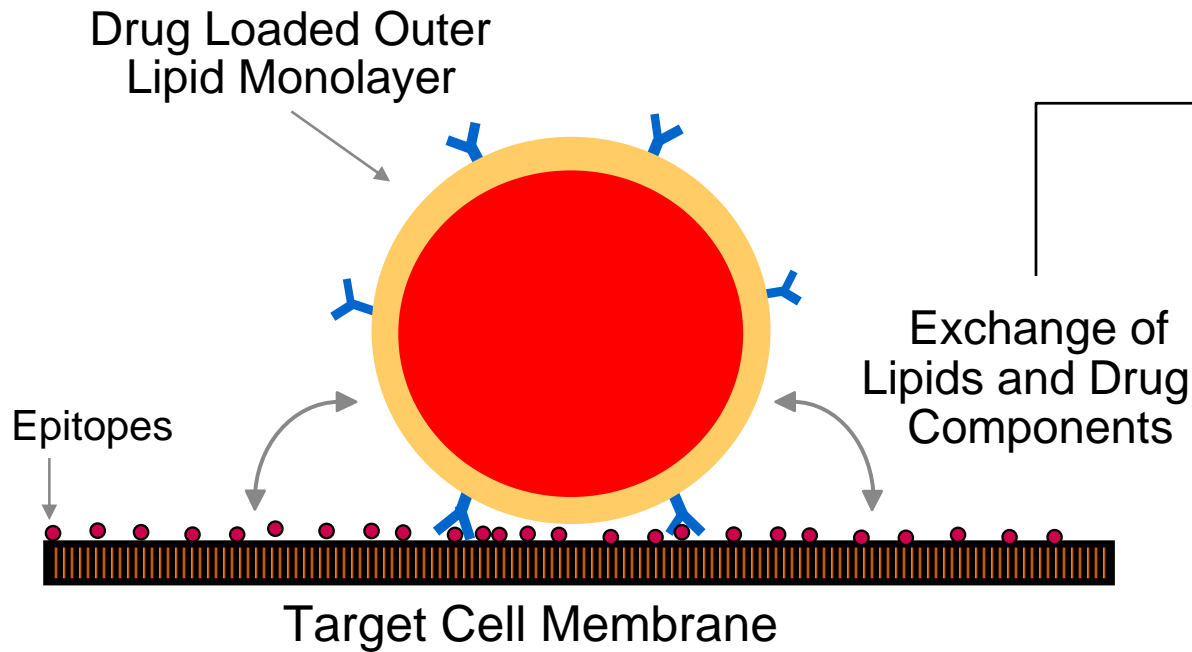


Angiogenesis around
2 mm melanoma tumor

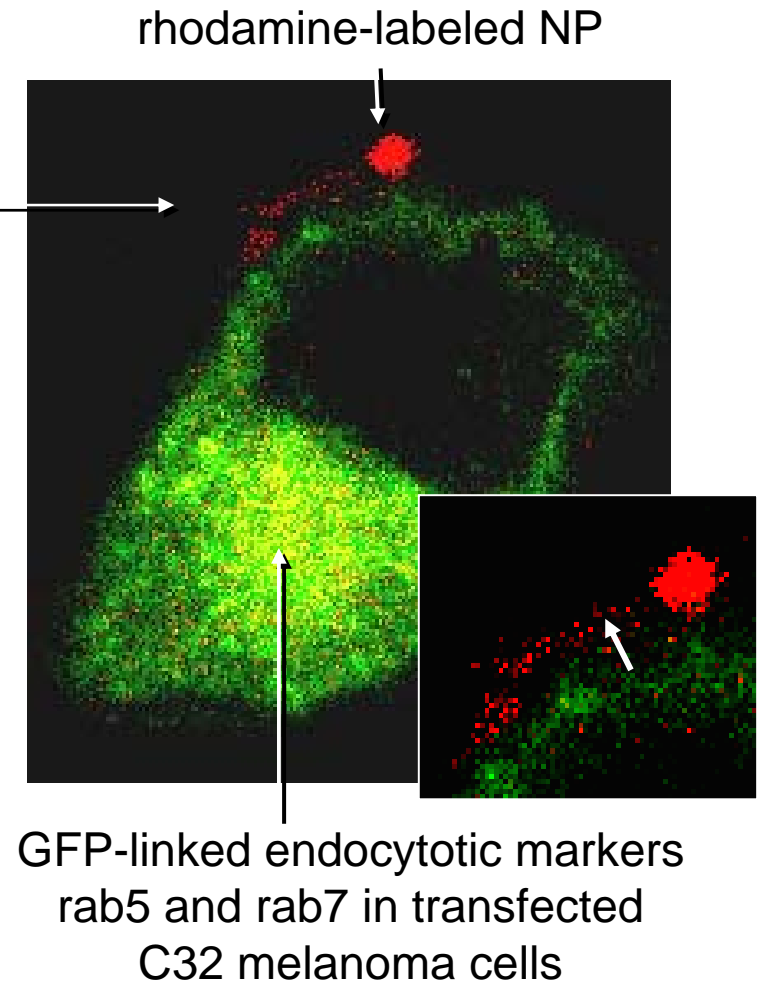


Time course

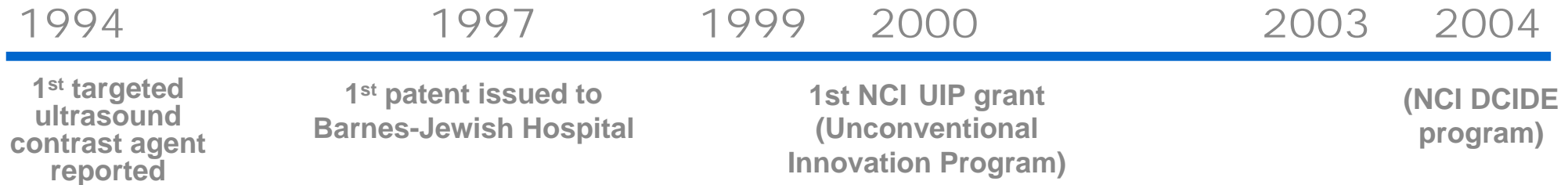
Novel Mechanisms Of Drug Delivery: “*Contact Facilitated Drug Delivery**”



Circulation 2002; 106:2842-2847



A Case Study in NCI-sponsored Technology Transfer



Kereos incorporated: license for entire nanoparticle platform from Hospital

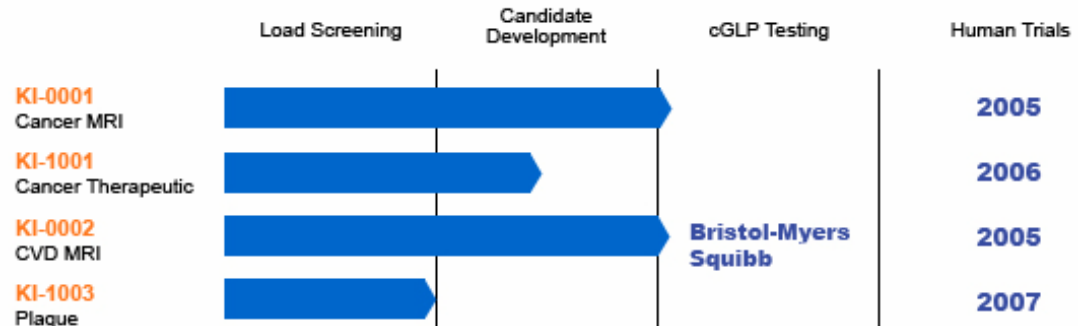
Corporate Partners

Dow Chemical

Philips Medical Systems

Bristol-Myers Squibb Medical Imaging

Pipeline Development



<http://www.kereos.com>

The Clinical Promise?

- *Very early diagnosis* of pathology
- *Prediction* of disease course
- “*Rational drug dosing*” for local drug/gene delivery
- *Quantification* of molecular response to therapy
- *Surrogate endpoints* for drug efficacy